

CLAIMS

1. A method for quickly measuring factors causing early flocculation of yeast contained in brewing materials, comprising the following steps:

- 1) a step for preparing yeast at late logarithmic growth phase or thereafter;
- 2) a step for preparing a water extracted-high-molecular weight fraction of a test material sample;
- 3) a step for mixing and suspending the yeast prepared in step 1) with the high-molecular weight fraction prepared in step 2), in a buffer solution; and
- 4) a step for measuring a precipitation level of the yeast mixed and suspended in the above step 3).

2. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to claim 1, wherein the yeast prepared in step 1) is obtained by culturing yeast, and collecting yeast at late logarithmic growth phase or thereafter, or by further cryopreserving the collected yeast.

3. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to claim 2, wherein the collected yeast is washed with EDTA.

4. The method for quickly measuring early flocculation factors of yeast contained in brewing materials according

to any one of claims 1 to 3, wherein the high-molecular weight fraction of step 2) is a high-molecular weight fraction prepared by ethanol precipitation of a water extraction solution of the test material sample, or a high-molecular weight fraction obtained by separating a water extraction solution of the test material sample by dialysis, ultrafiltration or gel filtration.

5. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to any one of claims 1 to 4, wherein the high-molecular weight fraction of step 2) is a high-molecular weight fraction prepared from a wort of the test material sample.

6. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to any one of claims 1 to 4, wherein the test material sample is treated with enzyme during extraction, when preparing the water-extracted high-molecular weight fraction of step 2).

7. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to any one of claims 1 to 6, wherein acetate buffer containing CaCl_2 is used as buffer solution of step 3).

8. The method for quickly measuring factors causing early

flocculation of yeast contained in brewing materials according to any one of claims 1 to 7, wherein the precipitation level of yeast of step 4) is measured by measuring optical density by using OD600.

9. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to claim 8, wherein the test system mixed and suspended in step 3) is allowed to stand for 15 min or more, which system is further mixed and suspended to measure the serial change of optical density by using OD600, when measuring the precipitation level of yeast in step 4).

10. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to claim 9, wherein the test system mixed and suspended in step 3) is allowed to stand for 30 min or more.

11. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to any one of claims 8 to 10, wherein the relative precipitation level of yeast of the test material sample is measured by using water or a non-early flocculating material as a sample instead of the test material sample of step 2), and the measured serial change of optical density of the sample by using OD600 is used as a control to compare with the measured optical density by using OD600 of the test material sample, when measuring the precipitation level of yeast in step 4).

12. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to claim 8, wherein the precipitation level of yeast is measured by measuring the optical density by using OD600 after allowing to stand still for 2 min or more, instead of measuring the serial change of optical density of the test sample by using OD600 after allowing the test system mixed and precipitated in step 3) to stand for 15 min or more, which system is further mixed and suspended, when measuring the precipitation level of yeast in step 4).

13. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to any one of claims 1 to 12, wherein the test material sample is barley, malt or malting barley.

14. The method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to any one of claims 1 to 13, wherein the water-extracted high-molecular weight fraction of the test material sample is a high-molecular weight fraction of an extraction solution wherein ground malt materials are extracted with water for 30 sec or more, or a high-molecular weight fraction of an extraction solution wherein barley ground materials or malting barley-ground materials are extracted with water for 15 min or more.

15. A method for quickly determining early flocculation property of yeast contained in brewing materials, using the method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to any one of claims 1 to 14.

16. A method for manufacturing malt by using a method for quickly determining early flocculation property of yeast in brewing materials, wherein the malt manufacturing process is controlled by determining early flocculating property of malt as raw material, malt under manufacture, or malt, by using the method for quickly measuring factors causing early flocculation of yeast contained in brewing materials according to any one of claims 1 to 14.

17. A method for manufacturing fermented alcoholic beverages, wherein the brewing materials to be used are selected and adjusted by using the method for quickly measuring factors causing early flocculation factors contained in brewing materials according to any one of claims 1 to 14 by determining the early flocculating property of the brewing materials.